A REVISION OF DISPARAGO Gaertn.

By

Margaret R. Levyns, B.A., D.Sc. F.R.S.S.Af.

The genus Disparago was established by Gaertner in 1791 for a plant which he named *Disparago ericoides*. His figure makes it quite clear that the plant which he had in mind is one which is abundant in the eastern coastal region of the Cape Province. His description, however, in which the capitula are stated to be 2-flowered is somewhat unfortunate in that it is not strictly applicable to this plant. This eastern Disparago is unique in the genus in that all the capitula are 1-flowered, though this single flower may be either tubular or ligulate. Capitula of both types are always found massed together in one head, so the general effect is the same as in the western Disparagos where the majority of the capitula are 2-flowered, one flower tubular and the other ligulate. It is fortunate that Gaertner's figure leaves no doubt as to the plant he named *Disparago ericoides*, which is the nomenclatural type, for in 1767 the plant now known as *Disparago lasiocarpa* was described by Bergius as *Stoebe ericoides*. In his description Bergius states that the ovary is tomentose and the ligulate florets sterile. These characters belong to a purely western plant and not to *Disparago ericoides* Gaertn. Bergius' specimen is preserved in the Linnaean Collection and its identity is certain. The specific name *lasiocarpa* given by Cassini in 1825 must therefore supersede the older name, the use of which was not permissible when this plant was transferred from Stoebe to Disparago.

Disparago is a natural genus and at first sight appears to be one easily defined. A detailed study, however, has shown that this is not the case. The 2-flowered capitulum, which is always taken to be a good generic character, is not a constant feature of any one species. The case of *D. ericoides* Gaertn. where the capitula are all 1-flowered has been quoted above. In *D. lasiocarpa* Cass., *D. laxifolia* DC., *D. Kraussii* Sch. Bip. and *D. anomala* Schlecht. *ex* Levyns most of the capitula are 2-flowered but 1-flowered capitula with a tubular floret are present in addition. *D. lasiocarpa* has fewer 1-flowered capitula than the others in which such capitula occur frequently. 3-flowered capitula have been noted occasionally in *D. laxifolia* and *D. Kraussii*. This variability in the number of florets in the capitulum in the recognised species of this genus leads one to the

MARY GUNN LIBRARY
NATIONAL BOTANICAL INSTITUTE
PRIVATE BAG X 101
PRETORIA 0001
REPUBLIC OF SOUTH AFRICA

inevitable conclusion that the number of florets though in general a useful guide, is not of paramount importance.

That being so, support is given to Hutchinson's proposal (1) to extend the genus to include two species in which the florets vary from 3 to 8 in the capitulum. As Hutchinson points out, the character of the pappus in these two species is an important feature. Throughout Disparago whenever a pappus is present the feathering of the bristles never extends to the base as is the case in the related genus Amphiglossa.

The pappus, apart from the type of feathering has proved a most variable feature and although its use as a specific character is still of value, yet considerable caution must be observed in making use of it as a diagnostic feature. In *D. ericoides* both types of floret possess a pappus which in general is composed of five bristles. Towards the northern limit of its distribution, however, in Kentani and the South of Natal, the number is always greater than five and may be as high as thirteen. In general *D. laxifolia* has five bristles on its tubular florets and none on its ligulate florets. However, a careful dissection of several hundred capitula revealed the fact that in rare instances bristles varying from one to three in number may be present on the ligulate floret. These cases were mostly recorded from those capitula where three florets (two ligulate and one tubular) were present, and in every case only one of the ligulate florets had a pappus. This detailed search made it apparent that the pappus, normally suppressed, had the power of developing on rare occasions.

The species *D. Kraussii* has only been collected six times. Generally the pappus is absent from the ligulate florets as in *D. laxifolia*. However, in a specimen (Schlechter 2449) from Christina Bay, George, which in all other respects agrees with *D. Kraussii*, the ligulate florets have a few pappus bristles. In the writer's opinion this feature in view of its instability in related species cannot be stressed greatly, and Schlechter's specimen has therefore been placed in *D. Kraussii*.

Disparago anomala, a name given by Schlechter but never published, is exceptional in that the pappus is lacking in both types of floret. This species occurs frequently from the Cape Peninsula eastwards to Bredasdorp and several hundreds of specimens have been examined. In one specimen only (Levyns 3534 Bredasdorp) is there a pappus of five bristles in the tubular floret. This specimen is a single shoot which together with four normal shoots was collected from plants growing in one spot and assumed to be all *D. anomala*. It was only on careful dissection that this one shoot was found to be different from the rest. The presence of the pappus makes the plant approach *D. laxifolia* so closely that it is difficult to separate it from that species. However, the habit is less lax than in the latter, the pappus bristles are less robust and the time of flowering is that of *D. anomala* not *D. laxifolia*, which flowers about three months earlier. If it be ceded that florets normally without a pappus have still the capacity for pappus production under certain circumstances, then this exceptional plant is best placed in *D. anomala*, and the case parallels that of Schlechter 2449 in *D. Kraussii*.

In connection with this phenomenon of sporadic pappus production in florets which have normally lost that capacity, it is interesting to recall that in *D. lasiocarpa* (the most stable species in floral characters of the western Disparagos) De Candolle separated off as a distinct species *D. seriphioides* a plant which differed from *D. lasiocarpa* merely in having five pappus bristles in the ligulate floret. This case has been discussed previously (**3**), and it was suggested that some of the numerous hairs from the ovary of the tubular floret had been mistaken for pappus bristles of the ligulate floret. In view of this recent discovery that the suppression of the pappus does not appear to be absolute in the genus, it is possible that Burchell 705 did have a pappus and is yet another instance of parallel behaviour in related species.

While dissecting large numbers of capitula in *D. laxifolia* in connection with the pappus, another feature was brought to light, namely, that whereas the majority of the florets have glabrous ovaries, yet now and then an odd one is formed with a dense covering of shaggy hairs on its ovary. It has always been assumed in the past that the presence or absence of hairs on the ovary is a good specific character in this genus and in a general sense it is still true. However, the occasional appearance of a hairy ovary among numerous glabrous ones indicates the need for caution when making use of such a character. It is of interest to note that in the allied genus Stoebe a similar variation in the ovary has been recorded. As the phenomenon appears to be of greater importance in that genus than here, the discussion on the subject will be postponed.

The species show a considerable range of variation in vegetative features. *D. lasiocarpa* and *D. anomala*, the two common species on the Cape Peninsula, were selected for special study. In both cases the majority of individuals examined fell into a single class with regard to length of internode and leaf size. However, as in previous genera studied (**2**, **4**), two other classes of plant occurred—(*a*) those in which the internodes were shorter than usual and the leaves smaller, and (*b*) those in which gigantism of all the parts was evident. Size in both cases bore no relation to habitat. Both these classes were much less frequent than the type, but their invariable presence indicates that these dwarf and giant forms cannot be neglected in the study of a species. Mutants of this type have been a fruitful source of confusion in herbaria and must of necessity be so when indoor study is not supplemented by work in the field.

An interesting giant plant of *D. lasiocarpa* (Levyns 5091) was observed coming up from its underground stem after a veld fire. It was larger and coarser in all its parts than any other plant seen and its capitula were grouped in rather small heads towards the ends of the branches. These were not closely massed in rounded heads at the extreme ends of the branches as in typical plants of this species. In *D. rosea* and *D. Kolbei* which Hutchinson considers primitive species in the genus, this feature is a normal characteristic and it is interesting to find that this character may appear as an exception in a species where the massing of capitula is a prominent feature.

Acknowledgments.

An important part of this investigation was carried out at Kew, and I am indebted to the Director for permission to work in the herbarium and for the many facilities afforded me. My thanks are due to the directors of the herbaria at Berlin, Paris and Geneva for the loan of type specimens. I have had free access to specimens housed in the British Museum, Bolus Herbarium and the South African Museum, and I wish to record my appreciation of the courtesy of the directors of those institutions.

DISPARAGO Gaert. Fruct. ii. 463 t. 173 (1791).

Capitula 1-8 flowered, both ligulate and tubular florets present in the same capitulum or in the same head formed by the massing of capitula. *Involucral bracts* imbricate, in few rows, the inner scarious the outer more or less leafy. *Receptacle* naked. *Tubular florets* bisexual, regular, with or without a pappus, style branches truncate penicillate, the base of the style swollen and seated on a waxy disc. *Ligulate florets* female or sterile, with or without a pappus. *Achenes* beakless and sessile. *Pappus,* when present, of bristles plumose in the upper part and naked at the base, sometimes with a small rim or minute scales external to the bristles.

Small shrubs with ericoid leaves.

An endemic South African genus. Species 7.

KEY TO THE SPECIES.

A. Florets more than three in a capitulum.
  B¹ Leaves straight, adpressed; young shoots densely woolly .. .. 1. *Kolbei.*
  B¹B¹. Leaves spirally twisted, somewhat spreading; young shoots not densely woolly .. .. 2. *rosea.*
AA. Florets 1—3 in a capitulum.
  B². Capitula normally 1-flowered .. .. 3. *ericoides.*
  B².B². Many capitula in each head with 2 flowers.
    C. Ovary of tubular floret densely hairy .. .. 7. *lasiocarpa.*
    CC. Majority of florets in any head with a glabrous ovary.
      D. Pappus normally absent from both florets 6. *anomala.*
      DD. Pappus present at any rate in the tubular florets.
        E. Spreading habit; leaves laxly arranged 5. *laxifolia.*
        EE. Erect habit; leaves crowded .. .. 4. *Kraussii.*

1. DISPARAGO KOLBEI Hutch. Kew Bull. p. 511 (1932). *Amphiglossa Kolbei* Bolus, Trans. S.Af. Phil. Soc. XVIII, p. 394 (1907-1909).

A grey, erect, much branched shrub, about 20 cm. high. Young branches densely woolly. *Leaves* ericoid, 2—3 mm. long, adpressed, closely packed, densely tomentose above, less so below, somewhat glabrescent. *Capitula* two or three together at the apices of the branches, rarely solitary. *Tubular florets* hermaphrodite, 2—4, pink, ovary glabrous, pappus of about 12 bristles slightly joined at the base and cupped with a saucer-like annulus. *Ligulate florets* female, 1—3, ovary and pappus as in the tubular florets.

Flowering season. October.

LAINGSBURG: Top of the Witteberg, Compton 2689!

PRINCE ALBERT: Zwartberg Pass, Kolbe 1477! Schröter!

This species and the next are very closely related, their capitula being indistinguishable. *D. rosea* has been collected once at an altitude of 3.000 ft. *D. Kolbei* has been found in two localities, (*a*) Zwartberg Pass (no altitude given) and (*b*) on the top of the Witteberg near Matjesfontein, at an altitude of 5,000 ft. In the related genera Stoebe and Metalasia woolly forms within a species are often characteristic of high altitudes, and it is possible that in this case we are dealing with the same phenomenon. However, the two species have been retained here pending further collections and observations in the field.

2. DISPARAGO ROSEA Hutch. in Kew Bull. p. 511 (1932).

A much branched, leafy shrub up to 25 cm. high. *Leaves* spirally twisted, spreading, 2—3 mm. long, mucronate, woolly on the upper surface. *Capitula* solitary or clustered at the ends of the shoots. *Tubular* *florets* hermaphrodite, 2—5, deep pink, ovary glabrous, pappus of about 12 bristles, slightly joined at the base, cupped by a shallow, saucer-like annulus. *Ligulate florets* female, 1—3, rose pink, irregularly toothed at the apex, ovary and pappus as in the tubular florets.

Flowering season. October.

UNIONDALE: Near Avontuur, Fourcade 1663!

3. DISPARAGO ERICOIDES Gaert. Fruct. ii. p. 463, t. 173 (1791). Less. Syn. Comp. p. 363 (1832). DC. Prod. VI, p. 257 (1837). Harv. in Fl. Cap. iii, p. 278 (1864-1865).

A much branched, densely leafy shrub, sometimes reaching a height of 90 cm., but usually smaller. *Leaves* ericoid, 3—6 mm. in length, tipped with a bristle, patent or reflexed, usually spirally twisted, upper surface woolly. *Capitula* crowded, forming dense, globose, terminal heads, each capitulum normally with one floret which may be either tubular or ligulate, both types present in the same head. *Involucral bracts* scarious, acuminate, a little shorter than the florets. *Tubular florets* hermaphrodite, usually pink sometimes white, pappus of 5—13 bristles, about the same length as the corolla. *Ligulate florets* female or neuter, usually pink sometimes white, pappus of 5—13 bristles shorter than the corolla. *Achenes* in both types of floret glabrous.

Flowering season, chiefly from May to September, but the season does not appear to be well defined.

STELLENBOSCH: (Collector unknown), Sir Lowry's Pass! CALEDON: (Collector unknown) Palmiet River! near Genadendal, Bolus 7394! RIVERSDALE: Garcia's Pass, Leipoldt (16049 in Bolus Herbarium)! HUMANSDORP: Humansdorp and van Staden's Rivierberge, Ecklon & Zeyher! Humansdorp, Rogers 2946! Levyns 3788! Karreedouw, Galpin 9347! UITENHAGE: Harvey 978! Zeyher! Ecklon! Between van Stadensberg and Bethelsdorp, Drège! PORT ELIZABETH: Ecklon and Zeyher! Tyson 2179! Paterson 1174! Zuurberg, Rennie 452! ALBANY: near Grahamstown, Tyson! Cooper 21! MacOwan 1002! Bolus 1626! Levyns 3765! Rennie 327! Burchell 3530! Rogers 27367! Zwartwater Poort, Burchell 3432! Soutar's Post between Riebeek East and Grahamstown, Burchell 3503! ALEXANDRIA: Galpin! Kowie, Tyson 13299 in Bolus Herbarium! SOMERSET EAST: Bowker! Boschberg, MacOwan 1002! KOMGHA: Kei Mouth, Flanagan 213! KENTANI. Pegler 260! NATAL: Murchison, J. M. Wood 3078! Umgumbe, J. M. Wood 12857!

4. DISPARAGO KRAUSSII Sch.Bip. in Flora XXVII, p. 693 (1844) Harv. in Fl. Cap. III, p. 278 (1864-1865).

An erect shrub up to 40 cm. high. *Leaves* ericoid, closely packed, erect, spirally twisted, 5 mm. long or less, woolly on the upper surface. *Capitula* massed in globose or oblong heads, mostly 2-flowered, mixed with occasional 1-flowered capitula in which the single floret is tubular, rarely 3-flowered. *Florets* white. *Tubular floret* hermaphrodite, with a pappus of 5 bristles, and a glabrous ovary. *Ligulate floret* sterile, pappus variable, absent or consisting of 1—5 bristles.

Flowering season. April to June.

Riversdale : Plattebosch, Muir 5217 ! Albertinia, Muir 1975 ! 1978 ! George : Christina Bay, Schlechter 2449 ! Knysna : Keet 960 ! Humansdorp : Zitzikama, Krauss !

5. **Disparago laxifolia** DC. Prod. VI. p. 257 (1837). Harv. in Fl. Cap. III, p. 278 (1864-1865).

A small, spreading undershrub, 15 cm. high or less. *Branches* with a covering of wool when young, becoming more or less glabrous with age. *Leaves* ericoid, up to 6 mm. long, spreading, scattered, spirally twisted, with a short mucro when young, woolly on the upper surface. *Capitula* in rounded heads at the ends of the branches. *Florets* white. Heads composed mainly of 2-flowered capitula with a few 1-flowered capitula interspersed, the floret of the latter always tubular ; rarely with 3 flowers, one tubular and two ligulate. *Tubular floret* hermaphrodite, with a pappus of 5 bristles ; ovary usually glabrous but occasional hairy ovaries may be present in a head in which most of the ovaries are glabrous ; a delicate annulus of small scales may be present outside the pappus. *Ligulate floret* sterile, normally without a pappus, but occasionally with 1—3 typical bristles.

Flowering season. October to January.

Cape : Simon's Bay, C. Wright ! Red Hill, T. Salter 286/12 ! Levyns 5093 ! Stellenbosch : Sir Lowry's Pass, Drège ! Schlechter 7223 ! Caledon : near Grabouw, H. Bolus 5077 ! Houw Hoek, Schlechter 5447 ! Caledon, Ecklon in h. Dunant ! Palmiet River, Levyns 5358 !

6. **Disparago anomala** Schlechter ex Levyns. (A manuscript name used by Bolus and Wolley Dod in " A List of the Flowering Plants and Ferns of the Cape Peninsula," Trans. S.Af. Phil. Soc. XIV, pp. 207-373 (1904).)

Foliis spiraliter tortis ; capitulis glomeratis, 1—2-floris ; pappo nullo.

A much branched undershrub, rarely over 20 cm. high, usually less. *Leaves* ericoid, more or less spirally twisted, up to 6 mm. in length, woolly on the upper surface. *Heads* globose or oblong, composed of numerous capitula, the majority having two flowers, a few 1-flowered.

Florets white. *Tubular floret* hermaphrodite, without a pappus, very rarely with a weakly developed pappus of 5 bristles, ovary glabrous. *Achene* sometimes with a rim-like annulus outside the bristles. *Ligulate floret* sterile, without a pappus.

The type is Schlechter 10443 from Papies Vley.

Flowering season. January to April.

Cape : Smitswinkel Bay, Wolley Dod 766 ! Levyns 4935 ! South West of Simon's Town, Pillans 4919 ! Buffels Bay, Salter 2933 ! 280/15B Cape Flats, R. S. Adamson, 4256 in University of Cape Town herbarium ! Klipfontein Road, Salter 280/15 ! West of Faure, Salter 4326 ! Caledon! Onrust Rivier, Schlechter 10393 ! Houw Hoek, Schlechter 7412 ! Bredasdorp : Elim, Schlechter 7679 ! Bredasdorp, S. J. Dix in S.A. Museum 41927 ! Galpin 10479 ! Levyns, 3523 ! 3534 ! 4871 ! Papies Vley, Schlechter 10443 !

7. **Disparago lasiocarpa** Cass. in Dict, Sci. Nat. XXXIV. p. 42 (1825). DC. Prod. VI, p. 258 (1837). Harv. in Fl. Cap. III, p. 278 (1864-1865). *D. seriphioides* DC. Prod. VI. p. 257 (1837). *D. hoffmanniana* Schlechter in Engler's Jahrb. XXVII p. 203 (1900). *Stoebe ericoides* Berg. Cap. p. 339 (1767). *Seriphium ericoides* Pers. Syn. ii, p. 500 (1807). *Wigandia disparaginoides* Less. Syn. Comp., p. 362 (1832).

A small densely leafy shrub up to 30 cm. high. *Branches* slightly woolly when young. *Leaves* ericoid, twisted, spreading, shortly mucronate, 6 mm. in length or less. *Capitula* grouped in heads which are usually terminal and globose, normally 2-flowered, rarely 1-flowered. *Florets* pink, the tubular darker than the ligulate, or rarely the ligulate floret white, the tubular purplish. *Tubular floret* hermaphrodite, with a pappus consisting of many bristles and the ovary densely covered with white, crisped hairs. *Ligulate floret* sterile with a rudimentary, glabrous ovary.

Flowering season. November to March.

Piquetberg : Edwards 14411 in Bolus Herbarium ! Tulbagh : Ecklon 385 ! 517 ! Pappe ! Cape : Flats near Salt River, Burchell 706 ! Cape Flats near Rondebosch, Burchell 829 ! Rondebosch, Drège ! Cape Flats, Ecklon 76 ! Wynberg, Roxburgh ! Hout Bay, Harvey 303 ! Raapenberg, Guthrie 755 ! Steenberg, Wolley Dod 746 ! Muizenberg, Bolus 3297 ! Chapman's Peak, Wolley Dod 2735 ! Kommetje, Moss 8834 ! Olifants Bosch, Levyns 5091 ! Koeberg, Pillans 6793 ! Stellenbosch : Sir Lowry's Pass, Drège ! Caledon : Steenbras, Moss and Rogers 1597 ! Houw Hoek, Bolus 3297 ! Schlechter 7412 ! 7417 ! T. M. Salter 4055 !

Mossel River, Potts 1609 ! Hermanus, Gillett 658 ! Palmiet River, Levyns 2694 ! 3847 ! Genadendal, Burchell 7840 ! Bolus 7394 ! Schlechter 9801 ! Levyns 4847 ! BREDASDORP : Elim, Schlechter 9643 ! SWELLENDAM : Breede River, Burchell 7472 ! Hessaquas Kloof, Burchell 7529 ! RIVERSDALE : Schlechter 2177 !

LITERATURE CITED.

1. HUTCHINSON, J. : Notes on the Flora of Southern Africa. Kew Bull. p. 511 (1932).
2. LEVYNS, MARGARET R. A Revision of Lobostemon Lehm. Journ. Linn. Soc. XLIX, pp. 393-451 (1934).
3. —— Notes on Nomenclature in some Members of Compositae. Trans. Roy. Soc. S.Af. XXIII, pp. 91-95 (1935).
4. —— A Revision of Elytropappus Cass. Journ. S. Af. Bot. I, pp. 89-103 (1935).